Defense Research, Surveys, and Statistics Center (RSSC)

2014 Post-Election Voting Survey of the Active Duty Military

Statistical Methodology Report

DMDC Report No. 2015-008
July 2015

2014 POST-ELECTION VOTING SURVEY OF THE ACTIVE DUTY MILITARY: STATISTICAL METHODOLOGY REPORT

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Acknowledgments

Defense Manpower Data Center (DMDC) is indebted to numerous people for their assistance with the *2014 Post-Election Voting Survey of the Active Duty Military (2014 PEV5)*, which was conducted on behalf of the Office of the Under Secretary of Defense for Personnel and Readiness (OUSD[P&R]). The survey program is conducted under the leadership of Paul Rosenfeld, Director of the Defense Research, Surveys, and Statistics Center (RSSC).

Federal Voting Assistance Program (FVAP) staff and other FVAP stakeholders contributed to the development of this survey.

Roger Tournageau, Westat, consulted on methodologies for weighting the survey and mixed-mode survey estimation (combining data from the phone and web components to establish a final data set for estimation).

RSSC's Statistical Methods Branch, under the guidance of Dave McGrath, Branch Chief, is responsible for the data processing, sampling, and weighting methods used by RSSC. Fawzi Al Nassir, SRA International, Inc., supervised the sampling and weighting processes, and provided consultations and overall process control. The lead statistician was Tim Markham, who used the DMDC Sampling Tool to design the sample and developed the weights for this survey. Sue Reinhold provided the data processing support. Tim Markham and Fawzi Al Nassir wrote this methodology report.

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2014 POST-ELECTION VOTING SURVEY OF THE ACTIVE DUTY MILITARY: STATISTICAL METHODOLOGY REPORT

Introduction

The Uniformed and Overseas Citizens Absentee Voting Act of 1986, Section 101.b (1), 42 USC §1973ff, now 52 U.S.C. 20310 (UOCAVA) permits members of the Uniformed Services and Merchant Marine and their eligible family members and all citizens residing outside the United States who are absent from the United States and its territories to vote in the general election for federal offices. These groups include:

- Members of the Uniformed Services including Army, Navy, Marine Corps, Air Force, and Coast Guard,
- U.S. citizens employed by the Federal Government residing outside the U.S., and
- All other private U.S. citizens residing outside the U.S.

The Federal Voting Assistance Program (FVAP), under the guidance of USD (P&R), is charged with implementing the UOCAVA and evaluating the effectiveness of its programs. The FVAP office asked RSSC to design, administer, and analyze post-election surveys on Uniformed Services voter participation, spouses of the active duty, voting assistance officers, and local election officials. Without such surveys, the Department will not be able to assess and improve voter access. In addition, such surveys fulfill the 1988 Executive Order 12642 that names the Secretary of Defense as the "Presidential designee" for administering the UOCAVA and requires surveys to evaluate the effectiveness of the program in federal election years.

The objectives of the 2014 post-election surveys are:

1. to gauge participation in the electoral process by citizens covered by UOCAVA,
2. to assess the impact of the FVAP's efforts to simplify and ease the process of voting absentee,
3. to evaluate other progress made to facilitate voting participation, and
4. to identify any remaining obstacles to voting by these citizens.

RSSC conducted surveys of military members, voting assistance personnel, and local election officials in the U.S.

This report focuses on the *2014 Post-Election Voting Survey of the Active Duty Military (2014 PEV5)*, which was designed to capture the attitudes and behaviors of active duty military members throughout the world. This report describes the sampling and weighting methodologies used in the *2014 PEV5*. Calculation of response rates is described in the final section. Information about the administration of the survey, such as email certificate issues with

contacting sampled members, and detailed documentation of the survey datasets is found in the *2014 Post-Election Voting Survey of Active Duty Military: Administration, datasets, and codebook* (DMDC, 2015). The *2014 Post-Election Voting Survey of Active Duty Military: Tabulation Volume* (DMDC, 2015b) contains estimates for survey questions.

Sample Design and Selection

Target Population

The target population for the active duty military members of the *2014 PEV5* was designed to represent individuals meeting all of the following criteria:

1. An active duty member of the Army, Navy, Marine Corps, Air Force, or Coast Guard;
2. Up to and including paygrade O6;
3. U.S. citizen.

Fielding of the *2014 PEV5* survey began November 5, 2014 and ended on February 18, 2015.

Sampling Frame

The sampling frame for the*2014 PEV5* consists of 1,339,697 active duty members. It was created from the June 2014 Active Duty Edit Master File (ADMF). To be included in the frame the member must be a U.S citizen and not a general or flag officer. In addition, the member must be serving in the Army, Navy, Marine Corps, Air Force, or Coast Guard. Additional information was obtained from the June 2014 Active Duty Family Database and the June 2014 Contingency Tracking System (CTS).

Eligibility updates for the sampling frame were done using the July 2014 Defense Enrollment Eligibility Reporting System (DEERS) Point-in-Time Extract (PITE). Active duty sample members were identified as ineligible using the August 2014 DEERS PITE. In addition, sample members were identified as ineligible by self or proxy report due to separation or retirement by the Survey Control System during the survey fielding period or by identifying themselves as non-U.S. citizens or under the age of 18 as of November 4, 2014.

Sample Design

The *2014 PEV5* sample used a single-stage stratified design. Five population characteristics defined the stratification dimensions: Duty Location, Service, Paygrade group, Age group, and Gender. The frame was partitioned into 237 mutually exclusive strata produced by a cross-classification of the stratification variables.

Within each stratum, individuals were selected with equal probability and without replacement. Since the allocation of the sample was not proportional to the size of the strata, selection probabilities varied among strata (i.e., individuals were not selected with equal probability overall). Non-proportional allocation was used to achieve adequate sample sizes for

small subpopulations of analytic interest (i.e., the survey reporting domains). These domains included subpopulations defined by the stratification characteristics, as well as other key reporting domains. Table 1 shows the stratification variables used in sampling and Table 24 in Appendix A shows the tabulation shell, which identifies the reporting domains.

For the *2014 PEV5*, FVAP was particularly interested in younger military members, aged 18 to 29. This age group has typically responded to RSSC surveys at lower rates than older groups. However, an experiment on the *2010 PEV5* showed that 18 to 29 year olds responded at much higher rates when the survey was conducted by phone. The results of this experiment are discussed in the *2010 Post-Election Voting Survey of Uniformed Service Members: Mode and Nonresponse Bias Studies* (DMDC, 2011). Because of the success conducting phone interviews with young military in 2010, RSSC recommended to FVAP that they utilize phone surveys again in 2014. However, the 2010 data showed some evidence of mode effects, specifically in questions asking from where survey respondents received information about the election and about access to the Internet and other technologies. Many other estimates, such as voting and registration rates, were not statistically significantly different from the production estimates. The differences that did exist, however, were mostly in the direction theorized by the literature (e.g., voting rates were slightly higher in the mode study than in the web survey, 34% to 29%). As a result, RSSC decided to conduct a second test of phone interviewing in 2014, this time focusing on the young military members (the 2010 study included all ages, and determined that older members were less likely to respond by phone) in order to better understand these mode effects while increasing the response rate for the young members. RSSC divided the sample of 18 to 29 year olds into three treatment groups, assigned randomly within strata:

- 46,644 members, or 67 percent of 18-29 year olds, received the full web survey along with all 30 and older sample members (61 questions collected data),

- 5,955 members, or nine percent, received an abbreviated version of the web survey (30 questions collected data) and,

- 16,873 members, or 24 percent, received the same abbreviated questionnaire but were administered the survey via phone.

RSSC designed the abbreviated survey to include the most important items while reducing the survey to a suitable length for phone interviewing. RSSC added the abbreviated web survey to make cleaner comparisons with the phone survey when testing for mode effects (i.e., it removes 'survey length' and 'question order effects' as possible reasons for observed differences). The Weighting section of this report describes the processes used for incorporating these different groups together as well as the methodology for handling the two sections of the questionnaire, referred to as Module A (the abbreviated questionnaire) and Module B (questions only on the full web questionnaire).

Sample Allocation

The *2014 PEV5* total sample size consisted of 94,699 active duty members, with 16,873 18 to 29 year olds in the phone group and 5,955 18 to 29 year olds in the abbreviated web group.

RSSC selected the sample from a population of 1,339,697 and determined the sample based on precision requirements for the key reporting domains shown in Appendix A.

Given estimated variable survey costs and anticipated eligibility and response rates, an optimization algorithm determined the minimum-cost allocation that simultaneously satisfied the domain precision requirements. Estimated eligibility and response rates for the *2014 PEV5* sample were based on the *2010 Post-Election Voting Survey of the Active Duty Military* and *2012 Post-Election Voting Survey of the Active Duty Military*.

RSSC accomplished the allocation by means of the DMDC Sample Planning Tool (SPT), Version 2.1 (Dever & Mason, 2003). This application is based on the method originally developed by J. R. Chromy (1987) and described in Mason, Wheeless, George, Dever, Riemer, and Elig (1995). The SPT defines domain variance equations in terms of unknown stratum sample sizes and user-specified precision constraints. The tool defines a cost function in terms of the unknown stratum sample sizes and the per-unit cost of data collection, editing, and processing. The tool solves the variance equations simultaneously, subject to the constraints imposed, for the sample size that minimizes the cost function. Eligibility rates modify the estimated prevalence rates used in the variance equations, thus affecting the allocation; response rates inflate the allocation, thus affecting the final sample size.

RSSC imposed precision constraints on the 29 domains of primary interest shown in Table 24 of Appendix A. Generally, the precision requirement was based on an estimated prevalence rate of 0.5 with a 95 percent confidence interval half-width no greater than 0.05. RSSC manipulated the constraints to produce an allocation that achieved satisfactory precision for the domains of interest at an approximate sample size of 95,000.

Table 2 shows the sample sizes by service component for the levels of the stratification variables and Table 3 shows the sample sizes by treatment group and age.

Table 1.
Variables for Stratification

Variable	Variable Name	Categories
Location	CREGION2	U.S. and U.S. Territories Overseas
Service	CSERVICE	Army Navy Marine Corps Air Force Coast Guard
Paygrade (5 Groupings)	CPAYGRP7	E1-E5 E6-E9 W1-W5 O1-O3 O4-O6
Age	AGE_5	18 to 24 Years Old 25 to 29 Years Old 30 to 34 Years Old 35 to 44 Years Old 45 Years Old or More
Gender	CSEX	Male Female

Table 2.
Sample Size by Stratification Variables

Stratification Variable	Total	Army	Navy	Marine Corps	Air Force	Coast Guard
Total	94,699	36,968	21,560	16,227	17,923	2,021
Location						
U.S. and U.S. Territories	65,981	25,560	16,268	11,470	10,666	2,017
Overseas	28,718	11,408	5,292	4,757	7257	4
Paygrade						
E1-E5	66,200	24,199	15,330	13,497	11,958	1,216
E6-E9	15,891	6,946	3,591	1,575	3358	421
W1-W5	1,387	1,043	92	167	0	85
O1-O3	6,438	2,805	1,464	621	1,377	171
O4-O6	4,783	1,975	1,083	367	1,230	128
Age						
18 to 24 Years Old	44,790	15,568	10,591	11,049	7,057	525
25 to 29 Years Old	24,682	10,005	5,809	2,989	5,237	642
30 to 34 Years Old	8,746	3,641	1,835	925	1,991	354
35 to 44 Years Old	12,120	5,425	2,364	1,052	2,932	347
45 Years Old or More	4,361	2,329	961	212	706	153

Table 2. (continued)

Stratification Variable	Total	Army	Navy	Marine Corps	Air Force	Coast Guard
Gender						
Male	81,400	31,861	17,926	15,059	14,848	1,706
Female	13,299	5,107	3,634	1,168	3075	315

Table 3.
Sample Size by Treatment Group and Age

Age	Total	Treatment Group		
		Full Web (Modules A and B)	Abbreviated Web (Module A Only)	Phone (Module A Only)
18 to 29 Years Olds	69,472	46,644	5,955	16,873
30 Years Old and More	25,227	25,227	0	0
Total	94,699	71,871	5,955	16,873

Weighting

RSSC created analytical weights for the *2014 PEV5* to account for unequal probabilities of selection and varying response rates among population subgroups. Sampling weights were equal to the inverse of the selection probabilities. After determining case dispositions, RSSC adjusted the sampling weights for eligibility and completion primarily to account for nonresponse. RSSC then poststratified the adjusted weights to match population totals and to reduce bias unaccounted for by the previous weighting steps.

Case Dispositions

RSSC assigned case dispositions for weighting based on eligibility and completion of the survey. Execution of the weighting process and computation of response rates depend on this classification.

Information from personnel records, field operations (the Survey Control System or SCS), and returned surveys determined the final case dispositions for weighting. No single source of information is both complete and correct; the order of precedence established in Table 4 resolved any inconsistencies. Table 5 shows the number of complete eligible respondents by stratification variable and module.

Table 4.
Case Dispositions for Weighting

Case Disposition (Samp_DC)	Information Source	Conditions	Sample Size (Module A)	Sample Size (Module B)
1. Record ineligible	Personnel record	Record ineligible – using the defense enrollment eligibility reporting system DEERS point-in-time extract (PITE) determined whether member separated from the military, passed away, or had no record in DEERS between the time of sample frame creation and survey fielding.	1,342	1,006
2. Ineligible by self- or proxy-report	Survey Control System (SCS)	Self or proxy reported that member was "Retired," "No longer employed by DoD," or "Deceased."	72	25
3. Ineligible by survey self-report	Survey eligibility questions	Deemed ineligible based on response to survey eligibility questions.	212	82
4. Eligible, complete response	Item response rate	Item response is at least 50%.	12,620	9,661
5. Eligible, incomplete response	Item response rate	Survey isn't blank but item response is less than 50%.	535	321
8. Active refusal	SCS	Reason survey is blank is "refused-too long", "refused-inappropriate/intrusive", "refused-other", "ineligible-other", "unreachable at this address", "refused by current resident", "concerned about security/confidentiality."	2,020	267
9. Blank return	SCS	No reason given.	78	75
10. Postal Non-Deliverable	SCS	Postal non-deliverable. For phone treatment, calls reached incorrect or disconnected number.	24,979	15,641
11. Non-respondent	Remainder	Remainder (typical non-respondents)	52,841	44,793
Total			94,699	71,871

Table 5.
Complete Eligible Respondents by Stratification Variables and Module

Stratification Variable	Module A (Full Web, Abbreviated Web, and Phone)	Module B (Full Web Only)
Total	12,620	9,661
Service		
Army	4,288	3,185
Navy	2,772	2,127
Marine Corps	1,596	1,099
Air Force	3,372	2,748
Coast Guard	592	502
Location		
U.S. and U.S. Territories	8,360	5,614
Overseas	4,260	4,047
Paygrade		
E1-E5	5,935	3,478
E6-E9	3,429	3,258
W1-W5	348	336
O1-O3	1,402	1,083
O4-O6	1,506	1,506
Age		
18 to 24 Years Old	3,579	1,814
25 to 29 Years Old	2,985	1,791
30 to 34 Years Old	1,460	1,460
35 to 44 Years Old	3,040	3,040
45 Years Old or More	1,556	1,556
Gender		
Male	10,723	8,181
Female	1,897	1,480

Designing Weights to Account for Treatment Groups

Due to the complex sample design, RSSC created two sets of weights to accurately estimate all survey questions. For the purposes of this report, Module A contained the questions seen by all sample members and Module B contained the questions seen only by the full web treatment group. Because the treatment groups that only saw Module A questions were limited to 18 to 29 year olds, if RSSC computed only one set of weights then estimates for Module B questions (i.e. questions that only the full web treatment group saw) would underrepresent that age group. Separate Module B weights ensured that the full web treatment group represented the full active duty military population. This section describes conceptually how the weights were developed and the following section explains the details of the weighting process.

Module A weights were more complex, as RSSC needed to combine the phone and web treatments into one set of weights. Due to differing response rates within subgroups for the two

modes as well as statistically significant mode effects in preliminary estimates, RSSC weighted the phone and web treatment groups separately before combining them into final Module A weights. In other words, RSSC separately weighted 1) the phone treatment to the population of 18 to 29 year olds and 2) the web treatments (full web and abbreviated web) to the entire active duty population before combining these intermediary weights to create final weights. The Nonresponse Adjustments and Final Weights section of this report describes the process of creating these intermediary weights in more detail. Visual representations of Module A and B weights are shown in Figures 1 and 2, respectively.

Figure 1.
Visual Representation of Module A Weights

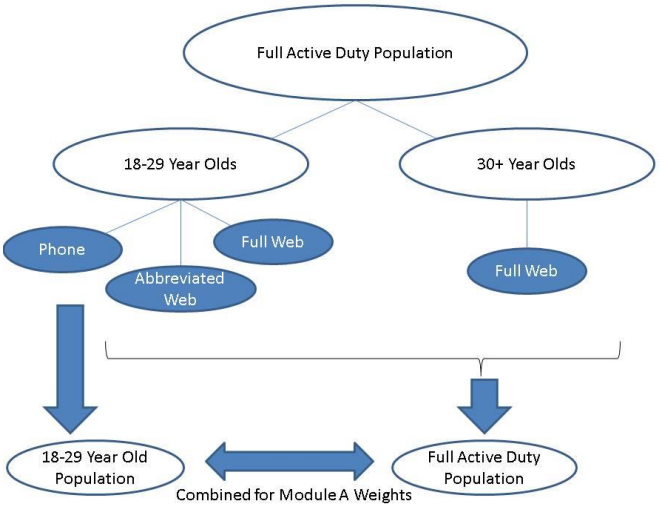
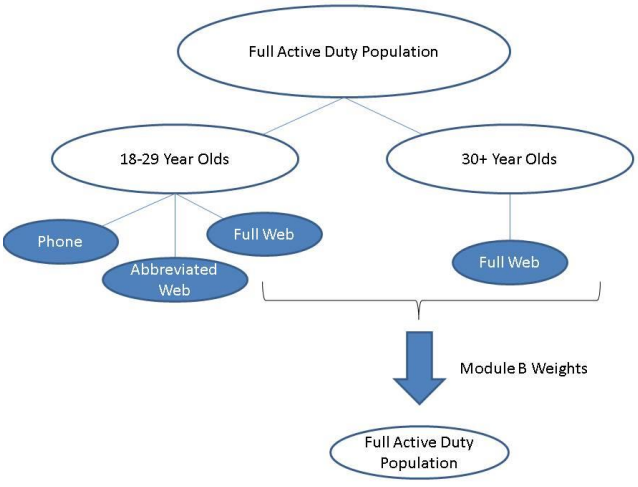


Figure 2.
Visual Representation of Module B Weights



In order to combine the intermediary weights from the phone and web cases to create final Module A weights, RSSC applied the variance strata definitions from the web Module A intermediary weights (which made the web treatment group representative of the full population) to both the phone and web groups. RSSC defined the variance strata by collapsing the original strata with the goal of at least 25 complete eligible web respondents in each variance stratum. As there were only 18 to 29 year olds in the phone treatment group, RSSC then determined the weighted frequency of 18 to 29 year old complete eligible respondents from phone and web within each variance stratum. The weight used for this frequency was the original sampling weight, which was defined as the reciprocal of the probability of selection within a stratum and was the same for all cases within the same stratum, regardless of treatment group. These frequencies determined the percent of weighted complete eligible cases in each variance stratum that were attributable to the phone and web groups, respectively. RSSC then multiplied the intermediary weights for all 18 to 29 year olds by the percentage for the appropriate mode and variance stratum to create final weights. For members 30 years of age and older, the final weight was equal to the intermediary weight, i.e. RSSC multiplied the intermediary weights by 1. The variance strata definitions and variance strata population totals from the web Module A intermediary weights became the definitions and totals for the Module A final weights for production estimation purposes.

Nonresponse Adjustments and Final Weights

The following process describes the weighting procedure for the Module B final weights and the intermediary weights that combined to form Module A final weights. After resolving case dispositions, RSSC adjusted the sampling weights for nonresponse. First, RSSC adjusted the sampling weights for cases of known eligibility (Samp_DC = 2, 3, 4, or 5) to account for cases of unknown eligibility (Samp_DC = 8, 9, 10, or 11). Next, RSSC adjusted the eligibility-adjusted weights for eligible respondents (Samp_DC = 4) to account for eligible sample members who had not returned a completed survey (Samp_DC = 5). RSSC excluded record ineligibles (Samp_DC = 1; sample members determined to be ineligible by the DEERS PITE before survey administration) from nonresponse adjustments.

RSSC computed the weighting adjustment factors for eligibility and completion as the inverse of model-predicted probabilities. First, a logistic regression model predicted the probability of eligibility for the survey (known eligibility versus unknown eligibility). A second logistic regression model predicted the probability of response among eligible sample members (complete response versus incomplete). Chi-squared Automatic Interaction Detector (CHAID) determined the best predictors for each logistic model. RSSC weighted both logistic models with the sampling weight. For the weighting processes of Module B and the phone treatment group intermediary weights of Module A, RSSC redefined the sampling weights so that the samples in these groups were representative of their respective populations. For example, the abbreviated web and phone treatment groups did not see the Module B questions and therefore needed to be excluded from the Module B weighting process. However, the original sampling weights were applied for all treatment groups and so the total sampling weight accounted for in the 18-29 Module B group would underrepresent the true population, as the weights applied to the abbreviated web and phone treatment groups would be missing from the Module B weighting process. Therefore, the sampling weights were recalculated to ensure that the sample members included in this weighting process were representative of the full active duty population.

Similarly, the phone treatment group needed a new sampling weight to ensure that the sampled 18-29 year olds represented the entire 18-29 year old active duty population. Table 6 lists the variables and levels used for eligibility and completion adjustments to the weights for all models.

Table 6.
Variables Used for the Eligibility and Completion Adjustments

Variable	Variable Name	Categories
Paygrade by Response Propensity	RESPPAY	E1-E2 E3-E4 E5 E6, O1-O2, W1-W2 E7, O3, W3 E8, O4, W4 E9, O5-O6, W5
Service	CSERVICE	Army Navy Marine Corps Air Force Coast Guard
Race	CRACE5	White/Asian Other Minority
Education	CEDUC	No College Some College College Degree Post-College Degree
On/Off Base	OFFBASE2	On Base Off Base
Location	CREGION2	U.S. and U.S. Territories Overseas
Occupation Group by Response Propensity	OCCGROUP2	Poor Responders Average Responders Good Responders
Gender	CSEX	Male Female
Age	AGE_5	18 to 24 Years Old 25 to 29 Years Old 30 to 34 Years Old 35 to 44 Years Old 45 Years Old or More
Family Status	FAMSTATX	Single with Children Single without Children Married with Children Married without Children

Finally, RSSC poststratified the weights to match population totals for key characteristics and to reduce bias unaccounted for by the previous weighting adjustments. For the phone group in Module A, the population is all 18 to 29 year olds, while the population for the web group in Module A and for Module B is the full active duty population. The cross-classification of

Service, paygrade, age, location, and gender defined the poststratification cells, which were collapsed where either the population size or number of complete eligible respondents was too small. Within each poststratification cell, RSSC adjusted the nonresponse-adjusted weights for eligible respondents (Samp_DC = 2, 3, 4) to match population counts. Table 7 lists the variables and categories used in poststratification.

Table 7.
Variables used for Post-stratification

Variable	Variable Name	Categories
Service	CSERVICE	Army Navy Marine Corps Air Force Coast Guard
Paygrade	CPAYGRP7	E1-E5 E6-E9 W1-W5 O1-O3 O4-O6
Age	AGE_5	18 to 24 Years Old 25 to 29 Years Old 30 to 34 Years Old 35 to 44 Years Old 45 Years Old or More
Location	CREGION2	U.S. and U.S. Territories Overseas
Gender	CSEX	Male Female

Table 8 through Table 10 show the distributions of the sampling weights, adjusted weights, final/intermediary weights, and adjustment factors by eligibility status for the intermediary weights for the phone and web groups for Module A and final weights for Module B, respectively. Table 11 through Table 13 show the sum of weights by eligibility status for each of these groups.

Table 8.
Distribution of Weights and Adjustment Factors by Eligibility Status, Phone Group for Module A

Eligibility Status	Statistic	Sampling Weight	Eligibility Status Adjusted Weight	Complete Eligible Response Adjusted Weight	Final Weight With Non-response and Poststratification Factors	Eligibility Status Factor	Complete Eligible Response Factor	Post-strati-fication Factor
Eligible Respondents	N	2,475	2,475	2,475	2,475	2,475	2,475	2,475
	MIN	17.3	105.4	114.2	71.9	3.6	1.0	0.6
	MAX	119.0	2,145.5	2,324.7	2,078.4	97.3	1.1	1.3
	MEAN	55.7	280.8	302.3	307.8	5.7	1.1	1.0
Self/Proxy Ineligibles	N	169	169	169	169	169	-	169
	MIN	17.3	105.4	105.4	66.4	3.6		0.6
	MAX	89.8	2,145.5	2,145.5	2,085.0	97.3		1.3
	MEAN	51.9	322.6	322.6	323.4	8.1		1.0
Non-Respondents	N	13,973	13,973	13,973	13,973	13,973	195	-
	MIN	17.3	-	-	-	-	-	
	MAX	119.0	2,137.5	-	-	97.3	-	
	MEAN	47.1	3.9	-	-	0.1	-	
Record Ineligibles	N	256	256	256	256	-	-	-
	MIN	17.3	17.3	17.3	-			
	MAX	82.3	82.3	82.3	-			
	MEAN	47.9	47.9	47.9	-			

Table 9.
Distribution of Weights and Adjustment Factors by Eligibility Status, Web Groups for Module A

Eligibility Status	Statistic	Sampling Weight	Eligibility Status Adjusted Weight	Complete Eligible Response Adjusted Weight	Final Weight With Non-response and Poststratification Factors	Eligibility Status Factor	Complete Eligible Response Factor	Post-strati-fication Factor
Eligible Respondents	N	10,145	10,145	10,145	10,145	10,145	10,145	10,145
	MIN	2.3	5.1	5.2	4.6	1.8	1.0	0.6
	MAX	107.8	1,710.5	1,729.4	1,841.8	70.8	1.1	1.6
	MEAN	18.8	123.5	128.2	130.3	7.2	1.0	1.0
Self/Proxy Ineligibles	N	115	115	115	115	115	-	115
	MIN	2.4	7.2	7.2	6.9	1.8		0.6
	MAX	107.8	888.4	888.4	976.5	55.0		1.5
	MEAN	20.9	146.9	146.9	153.7	8.2		1.0

Table 9. (continued)

Eligibility Status	Statistic	Sampling Weight	Eligibility Status Adjusted Weight	Complete Eligible Response Adjusted Weight	Final Weight With Non-response and Poststratification Factors	Eligibility Status Factor	Complete Eligible Response Factor	Post-strati-fication Factor
Non-Respondents	N	66,480	66,480	66,480	66,480	66,480	340	-
	MIN	2.3	-	-	-	-	-	
	MAX	107.8	888.4	-	-	55.0	-	
	MEAN	17.0	0.7	-	-	0.0	-	
Record Ineligibles	N	1,086	1,086	1,086	1,086	-	-	-
	MIN	2.3	2.3	2.3	-			
	MAX	79.1	79.1	79.1	-			
	MEAN	17.7	17.7	17.7	-			

Table 10.
Distribution of Weights and Adjustment Factors by Eligibility Status, Module B

Eligibility Status	Statistic	Sampling Weight	Eligibility Status Adjusted Weight	Complete Eligible Response Adjusted Weight	Final Weight With Non-response and Poststratification Factors	Eligibility Status Factor	Complete Eligible Response Factor	Post-strati-fication Factor
Eligible Respondents	N	9,661	9,661	9,661	9,661	9,661	9,661	9,661
	MIN	2.3	5.1	5.2	4.6	1.8	1.0	0.6
	MAX	107.8	1,660.1	1,692.0	1,787.6	65.1	1.1	1.6
	MEAN	19.7	129.6	134.5	136.9	7.0	1.0	1.0
Self/Proxy Ineligibles	N	107	107	107	107	107	-	107
	MIN	2.4	7.2	7.2	6.9	1.8		0.6
	MAX	107.8	990.2	990.2	1,089.8	54.4		1.5
	MEAN	21.9	155.9	155.9	164.2	7.9		1.0
Non-Respondents	N	61,097	61,097	61,097	61,097	61,097	321	-
	MIN	2.3	-	-	-	-	-	
	MAX	107.8	990.2	-	-	54.4	-	
	MEAN	18.5	0.8	-	-	0.0	-	
Record Ineligibles	N	1,006	1,006	1,006	1,006	-	-	-
	MIN	2.3	2.3	2.3	-			
	MAX	79.1	79.1	79.1	-			
	MEAN	19.2	19.2	19.2	-			

Table 11.
Sum of Weights by Eligibility Status, Phone Group for Module A

Eligibility Category	Sum of Sampling Weights	Sum of Eligibility Status Adjusted Weights	Sum of Complete Eligible Response Adjusted Weights	Sum of Intermediary Weights With Non-response and Poststratification Adjustments
1. Eligible Weighted	137,858	694,904	748,073	761,920
2. Ineligible Weighted	8,772	54,521	54,521	54,662
3. Non-response Unweighted	657,693	54,875	-	-
4. Record Ineligible Unweighted	12,259	12,259	12,259	-
Total	**816,582**	**816,558**	**814,853**	**816,582**

Table 12.
Sum of Weights by Eligibility Status, Web Groups for Module A

Eligibility Category	Sum of Sampling Weights	Sum of Eligibility Status Adjusted Weights	Sum of Complete Eligible Response Adjusted Weights	Sum of Intermediary Weights With Non-response and Poststratification Adjustments
1. Eligible Weighted	190,576	1,252,701	1,300,093	1,322,026
2. Ineligible Weighted	2,404	16,896	16,896	17,671
3. Non-response Unweighted	1,127,535	49,188	-	-
4. Record Ineligible Unweighted	19,181	19,181	19,181	-
Total	**1,339,697**	**1,337,966**	**1,336,171**	**1,339,697**

Table 13.
Sum of Weights by Eligibility Status, Module B

Eligibility Category	Sum of Sampling Weights	Sum of Eligibility Status Adjusted Weights	Sum of Complete Eligible Response Adjusted Weights	Sum of Final Weights With Non-response and Poststratification Adjustments
1. Eligible Weighted	189,905	1,252,002	1,298,974	1,322,126
2. Ineligible Weighted	2,345	16,683	16,683	17,571
3. Non-response Unweighted	1,128,090	49,995	-	-
4. Record Ineligible Unweighted	19,357	19,357	19,357	-
Total	**1,339,697**	**1,338,036**	**1,335,014**	**1,339,697**

Variance Estimation

Analysis of the *2014 PEV5* data requires a variance estimation procedure that accounts for the complex sample design and weighting. The final step of the weighting process was to define strata for variance estimation by Taylor series linearization. The *2014 PEV5* variance estimation strata correspond closely to the sampling strata; however, it was necessary to collapse some sampling strata containing fewer than 25 cases with nonzero final weights into similar strata. RSSC defined a total of 112 variance estimation strata for the *2014 PEV5*, with the variance strata being identical for Modules A and B as described above, and used SUDAAN software to create variance estimates.

Location, Completion, and Response Rates

RSSC calculated location, completion, and response rates in accordance with the recommendations of (AAPOR, 2015), which estimates the proportion of eligible respondents among cases of unknown eligibility.

The *location rate* (LR) uses AAPOR standard formula CON2 and is defined as

$$LR = \frac{(I+P)+R}{(I+P)+R+NC+e(UO)} = \frac{\text{adjusted located sample}}{\text{adjusted eligible sample}} = \frac{N_L}{N_E}.$$

The *completion rate* (CR) uses AAPOR standard formula COMR and is defined as

$$CR = \frac{(I+P)}{(I+P)+(R+NC)} = \frac{\text{complete eligible responses}}{\text{adjusted located sample}} = \frac{N_R}{N_L}.$$

The *response rate* (RR) uses AAPOR standard formula RR4 and is defined as

$$RR = \frac{(I+P)}{(I+P)+(R+NC+O)+e(UO)} = \frac{\text{complete eligible responses}}{\text{adjusted eligible sample}} = \frac{N_R}{N_E}.$$

where

- I = Fully complete responses according to RR4 (> 80% complete)
- P = Partially complete responses according to RR4 (50 – 80% complete)
- R = Refusal and break-off according to RR4 (< 50% complete)
- NC = Non-contact
- $e(UO)$ = Estimated eligibility of cases unknown
- N_L = Adjusted located sample
- N_E = Adjusted eligible sample
- N_R = complete eligible responses.

Table 14 shows the sample disposition codes associated with the corresponding response categories.

Table 14.
Disposition Codes for Response Rates

Response Category	SAMP_DC Values
Eligible Sample	4, 5, 8, 9, 10, 11
Located Sample	4, 5, 8, 9, 11
Complete Eligible Responses	4
Not Returned	11
Eligibility Determined Cases	2, 3, 4, 5, 8, 9
Self-Report Ineligible Cases	2, 3

Ineligibility Rate

The ineligibility rate (IR) is defined as:

IR = Self Report Ineligible Cases/Eligibility Determined Cases.

Estimated Ineligible Postal Non-Deliverable/Not Located Rate

The estimated ineligible postal non-deliverable or not located (IPNDR) is defined as:

IPNDR = (Eligible Sample - Located Sample) * IR.

Estimated Ineligible Nonresponse

The estimated ineligible nonresponse (EINR) is defined as:

EINR = (Not Returned) * IR.

Adjusted Location Rate

The adjusted location rate (ALR) is defined as:

ALR = (Located Sample - EINR)/(Eligible Sample - IPNDR - EINR).

Adjusted Completion Rate

The adjusted completion rate (ACR) is defined as:

ACR = (Complete Eligible Responses)/(Located Sample - EINR).

Adjusted Response Rate

The adjusted response rate (ARR) is defined as:

ARR = (Complete Eligible Responses)/(Eligible Sample - IPNDR - EINR).

Table 15 and Table 16 show the weighted sample counts used to compute the overall response rates for Modules A and B, respectively. The final response rate is the product of the location rate and the completion rate. Table 17 shows the unweighted and weighted location, completion, and response rates for Module A, while Table 18 shows the same rates for Module B.

Table 19 and Table 20 show the response rates for these modules by the stratification variables. Table 20 through Table 23 show the same information broken into the three treatment groups (full web, abbreviated web, and phone). In calculating response rates, each group used the sampling weight that made that group representative of the corresponding population. In other words, the sampling weights used in determining response rates for the phone and abbreviated web treatment groups represent only 18 to 29 year olds while the weights used for the full web group represent the full active duty population. In this respect, comparing the abbreviated web or phone response rates to the full web response rates is most informative for the age variable.

Table 15.
Comparison of the Final Sample Relative to the Drawn Sample, Module A

Case Disposition Categories	Sample Counts		Weighted Estimates	
	n	%	n	%
Drawn sample & Population	94,699		1,339,697	
Ineligible on master files	-1,342	1.4%	-19,010	1.4%
Self-reported ineligible	-284	0.3%	-4,393	0.3%
Total: Ineligible	-1,626	1.7%	-23,403	1.7%
Eligible sample	93,073	98.3%	1,316,294	98.3%
Not located (estimated ineligible)	-457	0.5%	-5,067	0.4%
Not located (estimated eligible)	-24,522	25.9%	-282,123	21.1%
Total not located	-24,979	26.4%	-287,190	21.4%
Located sample	68,094	71.8%	1,029,105	76.8%
Requested removal from survey mailings	-2,020	2.1%	-28,638	2.1%
Returned blank	-78	0.1%	-1,326	0.1%
Incomplete eligible cases	-535	0.6%	-7,850	0.6%
Did not return a survey (estimated ineligible)	-966	1.0%	-13,841	1.0%
Did not return a survey (estimated eligible)	-51,875	54.8%	-770,668	57.5%
Total: Nonresponse	-55,474	58.6%	-822,323	61.4%
Complete eligible responses	12,620	13.3%	206,782	15.4%

Table 16.
Comparison of the Final Sample Relative to the Drawn Sample, Module B

Case Disposition Categories	Sample Counts		Weighted Estimates	
	n	%	n	%
Drawn sample & Population	71,871		1,339,697	
Ineligible on master files	-1006	1.4%	-19,357	1.4%
Self-reported ineligible	-107	0.2%	-2,345	0.2%
Total: Ineligible	-1,113	1.6%	-21,702	1.6%
Eligible sample	70,758	98.5%	1,317,995	98.4%
Not located (estimated ineligible)	-160	0.2%	-3,013	0.2%
Not located (estimated eligible)	-15,481	21.5%	-261,520	19.5%
Total not located	-15,641	21.8%	-264,533	19.8%
Located sample	55,117	76.7%	1,053,462	78.6%
Requested removal from survey mailings	-267	0.4%	-6,066	0.5%
Returned blank	-75	0.1%	-1,546	0.1%
Incomplete eligible cases	-321	0.5%	-6,035	0.5%
Did not return a survey (estimated ineligible)	-459	0.6%	-9,681	0.7%
Did not return a survey (estimated eligible)	-44,334	61.7%	-840,229	62.7%
Total: Nonresponse	-45,456	63.3%	-863,556	64.5%
Complete eligible responses	9,661	13.4%	189,905	14.2%

Table 17.
Location, Completion, and Response Rates, Module A

Type of Rate	Computation	Unweighted	Weighted
Location	Adjusted located sample/Adjusted eligible sample	73.2%	78.3%
Completion	Complete eligible responses/Adjusted located sample	18.8%	20.4%
Response	Complete eligible responses/Adjusted eligible sample	13.8%	15.9%

Table 18.
Location, Completion, and Response Rates, Module B

Type of Rate	Computation	Unweighted	Weighted
Location	Adjusted located sample/Adjusted eligible sample	77.9%	80.0%
Completion	Complete eligible responses/Adjusted located sample	17.7%	18.2%
Response	Complete eligible responses/Adjusted eligible sample	13.8%	14.5%

Table 19.
Rates for Full Sample and Stratification Level, Module A

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
Sample	Sample	94,699	12,620	1,339,697	78%	20%	16%
Location	U.S. and U.S. Territories	65,981	8,360	1,188,467	79%	21%	16%
	Overseas	28,718	4,260	151,230	74%	19%	14%
Service	Army	36,968	4,288	490,859	75%	17%	13%
	Navy	21,560	2,772	311,430	77%	21%	16%
	Marine Corps	16,227	1,596	181,999	71%	17%	12%
	Air Force	17,923	3,372	316,290	86%	24%	21%
	Coast Guard	2,021	592	39,119	90%	35%	31%
Paygrade	E1-E5	66,200	5,935	793,768	69%	15%	10%
	E6-E9	15,891	3,429	301,228	91%	24%	22%
	W1-W5	1,387	348	21,008	94%	26%	24%
	O1-O3	6,438	1,402	135,854	88%	26%	23%
	O4-O6	4,783	1,506	87,839	96%	32%	31%
Age	17 to 24 Years Old	44,790	3,579	492,855	63%	15%	9%
	25 to 29 Years Old	24,682	2,985	323,814	79%	17%	14%
	30 to 34 Years Old	8,746	1,460	222,104	90%	19%	17%
	35 to 44 Years Old	12,120	3,040	248,525	94%	28%	26%
	45 Years Old and More	4,361	1,556	52,399	95%	39%	37%
Gender	Males, Unknown	81,400	10,723	1,137,553	78%	20%	16%
	Female	13,299	1,897	202,144	80%	21%	17%

Table 20.
Rates for Full Sample and Stratification Level, Module B

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
Sample	Sample	71,871	9,661	1,339,697	80%	18%	15%
Location	U.S. and U.S. Territories	48,414	5,614	1,188,467	80%	18%	14%
	Overseas	23,457	4,047	151,230	83%	18%	15%
Service	Army	28,565	3,185	490,859	76%	15%	11%
	Navy	16,175	2,127	311,430	79%	19%	15%
	Marine Corps	11,614	1,099	181,999	73%	14%	10%
	Air Force	13,885	2,748	316,290	89%	22%	20%
	Coast Guard	1,632	502	39,119	91%	35%	31%
Paygrade	E1-E5	45,964	3,478	793,768	71%	12%	8%
	E6-E9	14,773	3,258	301,228	92%	24%	22%
	W1-W5	1,343	336	21,008	94%	25%	24%
	O1-O3	5,008	1,083	135,854	90%	25%	22%
	O4-O6	4,783	1,506	87,839	96%	32%	31%
Age	17 to 24 Years Old	30,083	1,814	492,889	65%	10%	7%
	25 to 29 Years Old	16,561	1,791	323,708	83%	14%	12%
	30 to 34 Years Old	8,746	1,460	222,176	90%	19%	17%
	35 to 44 Years Old	12,120	3,040	248,525	94%	28%	26%
	45 Years Old and More	4,361	1,556	52,399	95%	39%	37%
Gender	Males, Unknown	61,837	8,181	1,137,517	80%	18%	14%
	Female	10,034	1,480	202,180	82%	20%	16%

Table 21.
Rates for Full Sample and Stratification Level, Full Web Treatment Group

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
Sample	Sample	71,871	9,661	1,339,697	80%	18%	15%
Location	U.S. and U.S. Territories	48,414	5,614	1,188,467	80%	18%	14%
	Overseas	23,457	4,047	151,230	83%	18%	15%
Service	Army	28,565	3,185	490,859	76%	15%	11%
	Navy	16,175	2,127	311,430	79%	19%	15%
	Marine Corps	11,614	1,099	181,999	73%	14%	10%
	Air Force	13,885	2,748	316,290	89%	22%	20%
	Coast Guard	1,632	502	39,119	91%	35%	31%
Paygrade	E1-E5	45,964	3,478	793,768	71%	12%	8%
	E6-E9	14,773	3,258	301,228	92%	24%	22%
	W1-W5	1,343	336	21,008	94%	25%	24%

Table 21. (continued)

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
	O1-O3	5,008	1,083	135,854	90%	25%	22%
	O4-O6	4,783	1,506	87,839	96%	32%	31%
Age	17 to 24 Years Old	30,083	1,814	492,889	65%	10%	7%
	25 to 29 Years Old	16,561	1,791	323,708	83%	14%	12%
	30 to 34 Years Old	8,746	1,460	222,176	90%	19%	17%
	35 to 44 Years Old	12,120	3,040	248,525	94%	28%	26%
	45 Years Old and More	4,361	1,556	52,399	95%	39%	37%
Gender	Males, Unknown	61,837	8,181	1,137,517	80%	18%	14%
	Female	10,034	1,480	202,180	82%	20%	16%

Table 22.
Rates for Full Sample and Stratification Level, Abbreviated Web Treatment Group

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
Sample	Sample	5,955	484	816,494	73%	13%	10%
Location	U.S. and U.S. Territories	4,583	378	724,091	72%	14%	10%
	Overseas	1,372	106	92,403	80%	11%	9%
Service	Army	2,192	103	282,331	65%	8%	5%
	Navy	1,403	112	193,099	72%	12%	9%
	Marine Corps	1,205	73	140,802	69%	10%	7%
	Air Force	1,053	169	182,581	86%	20%	17%
	Coast Guard	102	27	17,681	91%	31%	28%
Paygrade	E1-E5	5,278	363	697,808	70%	11%	8%
	E6-E9	292	34	41,403	86%	14%	12%
	W1-W5	11	4	1,396	100%	35%	35%
	O1-O3	374	83	75,887	88%	27%	24%
	O4-O6	N/A	N/A	N/A	N/A	N/A	N/A
Age	17 to 24 Years Old	3,834	235	492,521	65%	11%	7%
	25 to 29 Years Old	2,121	249	323,973	84%	16%	13%
	30 to 34 Years Old	N/A	N/A	N/A	N/A	N/A	N/A
	35 to 44 Years Old	N/A	N/A	N/A	N/A	N/A	N/A
	45 Years Old and More	N/A	N/A	N/A	N/A	N/A	N/A
Gender	Males, Unknown	5,108	387	688,205	72%	12%	9%
	Female	847	97	128,289	76%	17%	13%

Table 23.
Rates for Full Sample and Stratification Level, Phone Treatment Group

Variable	Domain	Sample	Complete Eligible Responses	Sum of Weights	Located %	Completed %	Response %
Sample	Sample	16,873	2,475	816,582	60%	29%	18%
Location	U.S. and U.S. Territories	12,984	2,368	724,179	66%	30%	20%
	Overseas	3,889	107	92,403	18%	16%	3%
Service	Army	6,211	1,000	282,331	62%	31%	19%
	Navy	3,982	533	193,099	57%	28%	16%
	Marine Corps	3,408	424	140,890	56%	27%	15%
	Air Force	2,985	455	182,581	62%	31%	19%
	Coast Guard	287	63	17,681	75%	30%	22%
Paygrade	E1-E5	14,958	2,094	697,808	58%	29%	17%
	E6-E9	826	137	41,403	70%	27%	19%
	W1-W5	33	8	1,484	75%	35%	26%
	O1-O3	1,056	236	75,887	75%	33%	24%
	O4-O6	N/A	N/A	N/A	N/A	N/A	N/A
Age	17 to 24 Years Old	10,873	1,530	492,859	56%	30%	17%
	25 to 29 Years Old	6,000	945	323,723	66%	28%	19%
	30 to 34 Years Old	N/A	N/A	N/A	N/A	N/A	N/A
	35 to 44 Years Old	N/A	N/A	N/A	N/A	N/A	N/A
	45 Years Old and More	N/A	N/A	N/A	N/A	N/A	N/A
Gender	Males, Unknown	14,455	2,155	687,948	60%	30%	18%
	Female	2,418	320	128,634	63%	26%	16%

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Appendix A.

Table 24.
Tabulation Shell

	Percent Responding		Percentages													Max ME
			1	2	3	4	5	6	7	8	9	10	11	12	13	
OVERALL AND SERVICE																
Total																
Army																
Navy																
Marine Corps																
Air Force																
Coast Guard																
PAYGRADE																
Enlisted																
E1 – E5																
E6 – E9																
Officers																
O1 – O3																
O4 – O6																
AGE																
18 to 24 Years Old																
25 to 29 Years Old																
30 to 34 Years Old																
35 to 44 Years Old																
45 Years Old or More																
GENDER																
Male																
Female																
LOCATION																
US (Incl. Territories)																
18 to 24 Years Old																
25 to 29 Years Old																
30 to 34 Years Old																
35 to 44 Years Old																
45 Years Old or More																
Overseas																
18 to 29 Years Old																
30 to 34 Years Old																
35 Years Old or More																
VOTER REGISTRATION STATUS																
Registered to Vote																
Not Registered to Vote																
FIRST TIME																
Voting or Trying to Vote																
Voting or Trying to Vote Absentee																
VOTING BEHAVIOR IN 2014 ELECTION																
Definitely Voted																
In Person																
Absentee																
Did Not Vote/Not Sure																
Interested																

Note. Reporting categories below Voter Registration Status are based on self-report data from the survey and do not have administrative equivalents in DMDC files. As a result, these categories were not included during sampling.

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